January 17, 1951

Dr. Waldo Cohn
Biology Division
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Dear Waldo:

Our heartiest congratulations for a magnificient piece of work. You probably are not aware that both Leon and I had work under way with similar objectives, and I suppose we might feel disappointed. However, we are genuinely pleased that it was you and not anyone else who made this major discovery.

Let me mention, first, the sort of thing we have been doing: I started out some months ago with the objective of purifying an enzyme which acted upon the ribonuclease-limit polynucleotide. I had known for some time of the existence of an active nuclease in potato extracts and from our experience with this source started out with it. I was able to enrich the nuclease activity about 200-fold based on protein, but the monoesterase activity was still high. Our hope was that we might ultimately be able to obtain a monoesterase-free preparation and thus be able to examine not only the nature of the mononucleotides but also look for the presence of some enzyme-resistant polynucleotide fragment.

Leon was following up Gulland's work with snake venoms and had reached a point where we were convinced of the absence of any activity in these preparations toward "yeast" mononucleotides. Still there was a release by such venoms of 40-90 per cent of the nucleic acid phosphate as ortho phosphate. I must confess that when we had gone over Klein's data concerning the effects of arsenate on RNA hydrolysis by alkaline phosphatase, we were quite unimpressed by the feasibility of this method as a means of achieving simple diesterase action.

Concerning our potato nucleotide pyrophosphatase, we made attempts during the past few years to see whether it had any effect either on intact RNA or on ribonuclease-treated RNA and could observe none. However, I would be only too happy to furnish some material which you can put to test in some way that we may not have thought of.

I am sending along 0.5 cc. of a most purified preparation (calcium phosphate, second absorption, eluate, Table I, p. 766, v. 182, Journal of Biological Chemistry). (Unfortunately we have very little of this good stuff left.) This has approximately 3,000 DPM units per cc. It has other phosphatase activities as indicated on page 776 and a very slight amount of nuclease activity. I will also send along some less purified material, which is more available but for which we do not have as much data.

If you decide to undertake the purification of this enzyme from potatoes, I might offer the following suggestions: It is worth surveying different batches of potatoes from the market for their potency since the variation is rather wide. Also, we have learned recently that the calcium phosphate adsorption and elution step, which is the most effective in raising the purity, can be applied after the first ethanol fractionation.

I certainly appreciate your thoughtfulness in sending us an advance copy of your manuscript, and it was a genuine pleasure to all of us to read it. Of course, we are most anxious to hear about the further developments, w, x, y, z, etc.

With fond regards from all of us,

Sincerely yours,

Arthur Kornberg

AK:rsb